BlueSunGroup

Solar Panel Mounting System

Installation Manual

Blue Sun Group
Make installation simple

Introduction

Blue Sun Group Mounting System uses the highest quality materials. The mounting systems were designed and certified to comply with AS/NZS 1170.2 Wind Loads when installed correctly. AS/NZS 1170.2 Wind Loads is an Australian Standard based on the International Standard ISO 4354, Wind actions on structures. Blue Sun Group offers 10 years manufacturing warranty on solar mounting system.

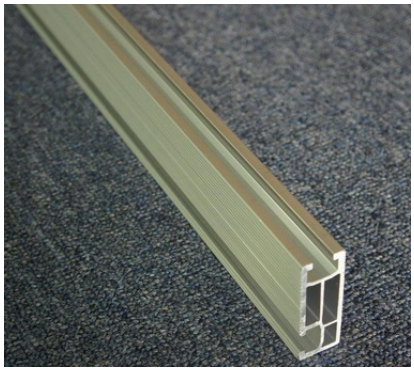
Technical Specifications

Material	Extruded Aluminium 6061/ Stainess Steel 304
Installation site	Australia / NZ
Roof types	steel, tile and slate
Modules thickness	30 to 50mm
Module arrangement	portrait or landscape
Roof slope	10° to 65°
Building height	Up to 200m
Mounting structure	timber or steel substructure
Static load capacity	Up to 1800N

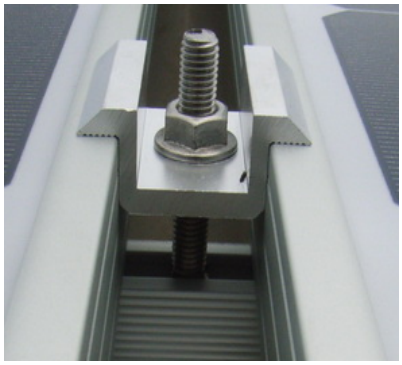
Blue Sun Group Component Descriptions

1. Rails hold each panel row and are custom designed and made 6061 extruded aluminium. BSG rails are available in 2600, 3440, 6000mm and customized length.

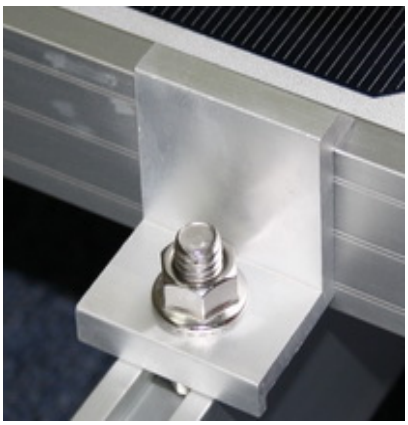
Rail Length
mm
2600
3440
6000
Custom



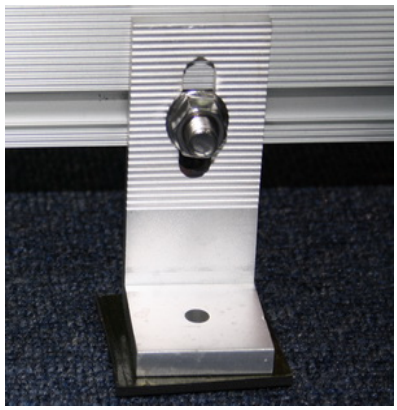
2. Mid clamps hold each (and every neighbouring) panel onto the rails.



3. End clamps hold the edge of each 'end' panel and are fully height adjustable to accommodate solar panels of any thickness (between 30 and 50mm).



4. L-foot steel roof mounts secure the railing on the roof. The L-foot is made from aluminium and must be used with the supplied isolation washer to prevent galvanic corrosion to the roof material.



5. Tile brackets fix the railing to the rafters below a tile roof and ensure a waterproof finish.

6. Joiners extend BSG Rails to any length as required by the quantity or width of the solar panels.

7. Tilt legs extend the back mounting points on a steel roof along the length of the array to increase the angle of elevation, where the latitude and/or roof angle are too low for efficient solar operation. Tilt legs are available in 300, 500, 600, 700, 800 and 900mm lengths. Each leg includes a 150mm front leg that allows clearance at the front of the array to facilitate hinging.

Front leg	Back leg
mm	mm
150	300
150	500
150	600
150	700
150	800
150	900

Fixing Locations and Array Placement

Fixing within Roof Internal Zone

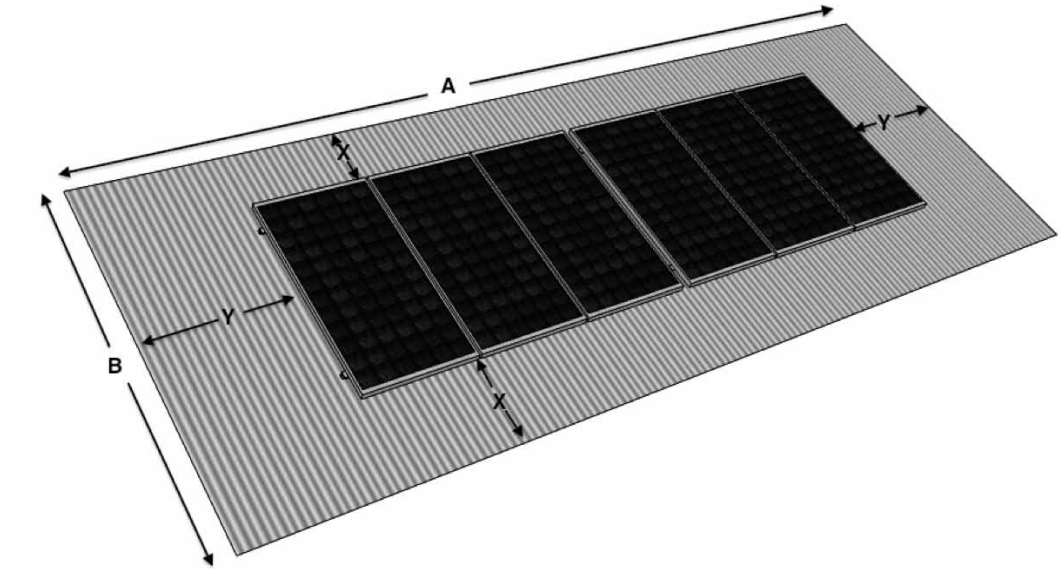
The solar panels must be located in the Roof Internal Zone. Placement of the array outside this zone will inflict undue stress on the framing fixings and clamps, and the warranty will be voided.

PERIMETER ZONES

'Y' must be at least 20% of 'A' and at least 20% of the building height.

'X' must be at least 20% of 'B' and at least 20% of the building height.

Contact your BSG supplier for further advice if required.



Assess Basic Roof Details

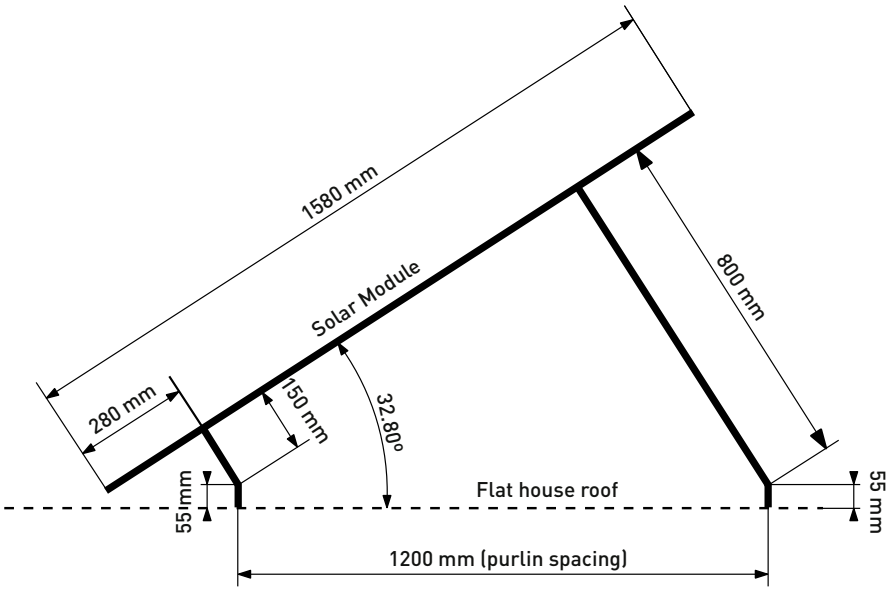
›› Determine the roof substructure and attachment method; for steel sheet roofing with timber/steel structure, select the L-foot; for tile roofs, select the tile bracket.
The fixing bracket type does not change the design calculations.

›› Determine whether the array requires an increased angle of elevation (tilt legs may be required).

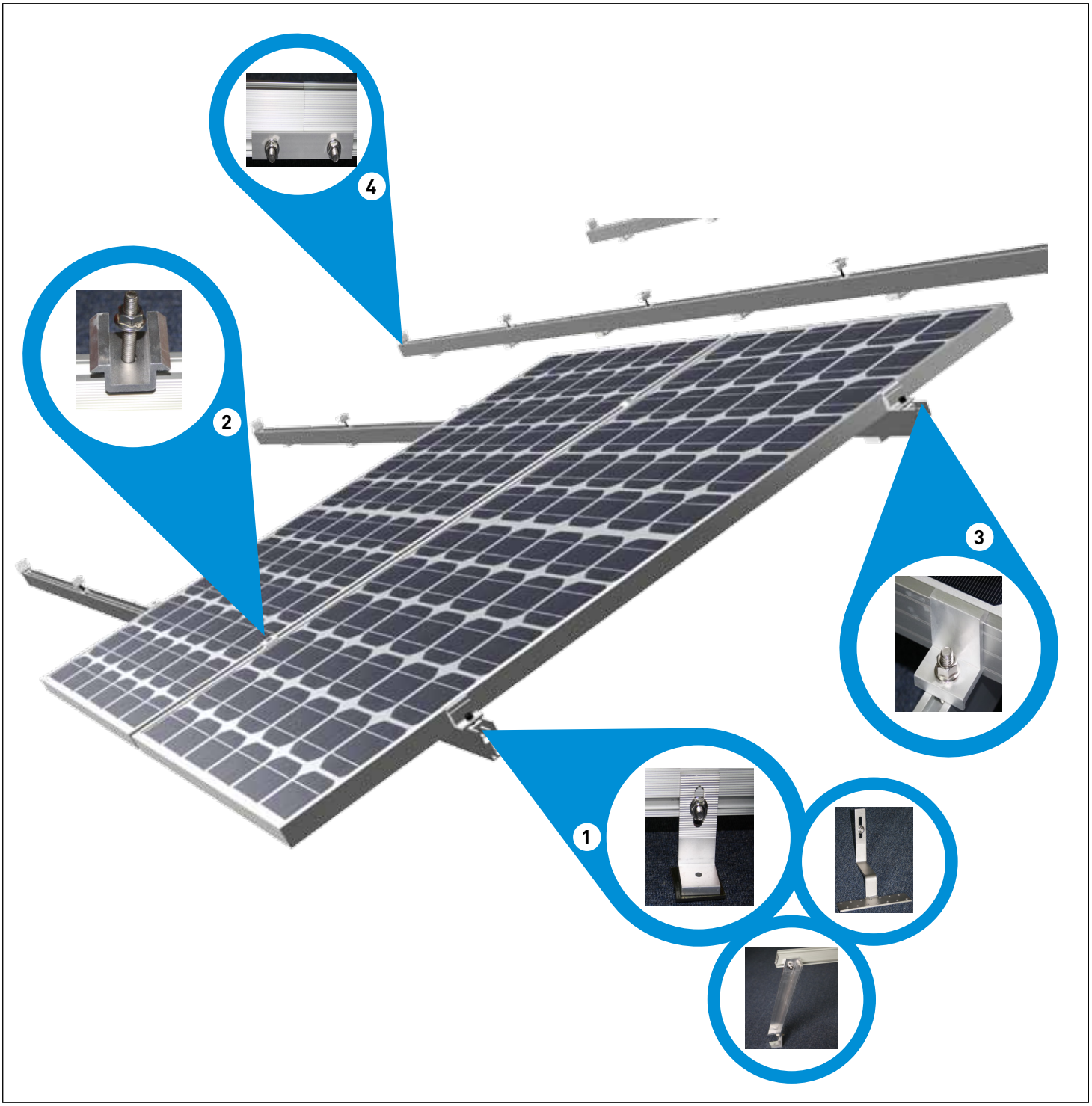
Angle of panel array in relation to purlin spacing and leg length

Purlin Spacing	Tilt Leg Length				
	500mm	600mm	700mm	800mm	900mm
900mm	23°	30°	37°	NA	NA
1000mm	20°	27°	33°	40°	NA
1100mm	18°	24°	30°	36°	43°
1200mm	17°	22°	27°	33°	39°

According to the BSG 190W Solar Module



Installation Steps



1. Connecting Rail to Roof Mounts

Connect the rail to the roof mounts by inserting the roof mount keylock into the rail channel. Make sure the ridged rail surface faces the ridged surface of roof attachments. Fasten the cap screw on the keylock 2-3 turns to loosely hold the rail in position.

2. Connecting Rail to Roof Mounts

The rail can be adjusted vertically within the roof attachment slot when bolts are loosely fastened.

3. Connecting Multiple Rails

Join rail segments by inserting the rail joiner into the rail channel.

4. Connecting Multiple Rails

Fasten cap screws to secure.

5. Installing End Clamps

Insert keylock of the end clamp into the rail channel. Using a Spanner, secure the first solar panel to the railing starting as close to the end of the row as possible. You will need a minimum of 50mm between the end of the rail and edge of the first solar panel.

6. Installing Mid Clamps

Insert the keylock of the mid clamp into the rail channel and position the clamp against the first panel frame. Hand-tighten the screw 2-3 turns to loosely hold the clamp in position.

7. Installing Mid Clamps

Slide second panel firmly into place against the mid clamps and fasten bolts.

8. Check Alignment of the Array

After fixing the first 2 panels, check that the array is straight. If there appears to be a deviation from square (e.g. if the ridge cap shows the row to be falling or rising slightly), readjust the panels until they appear square with the roof.

9. Continue Installing Mid Clamps

Continue to clamp the neighbouring panels in the array to the rails.

10. Install End Clamps

Finish the array row by securing the remaining two end clamps. You should have a minimum of 50mm clearance between the edge of the last panel and the end of the rail. Tighten all bolts to secure the panels.

Installing Tilt Legs

Start installing tilt legs by fixing the L-feet in place with the upright part of the 'L' facing towards the ridge of the roof. Using the supplied bolts and locknuts, fix the legs to the L-foot mounts to the point where the movement of the leg is firm but not permanently fixed (i.e. still hinges in the hand firmly). Tilt the front and back legs such that they are matched in angle, then fix the BSG rail to the front of each leg. Before finally tightening the leg hinge fixings, ensure rails are parallel by sighting them from a distance; this will ensure a level fixing plane.

Using tools to clamp the solar panels to the railing (using end clamps) starting as close to the end of the row as possible. You will need a minimum of 50mm between the end of the rail and edge of the first solar panel. Continue to clamp the neighbouring panels to the rails with the mid clamps. After fixing the frst two panels, check that the array is straight. If there appears to be a deviation from square (e.g. if the ridge of the roof shows the row to be falling or rising slightly), readjust the panels until they appear square with the roof.

Maintenance and Cleaning

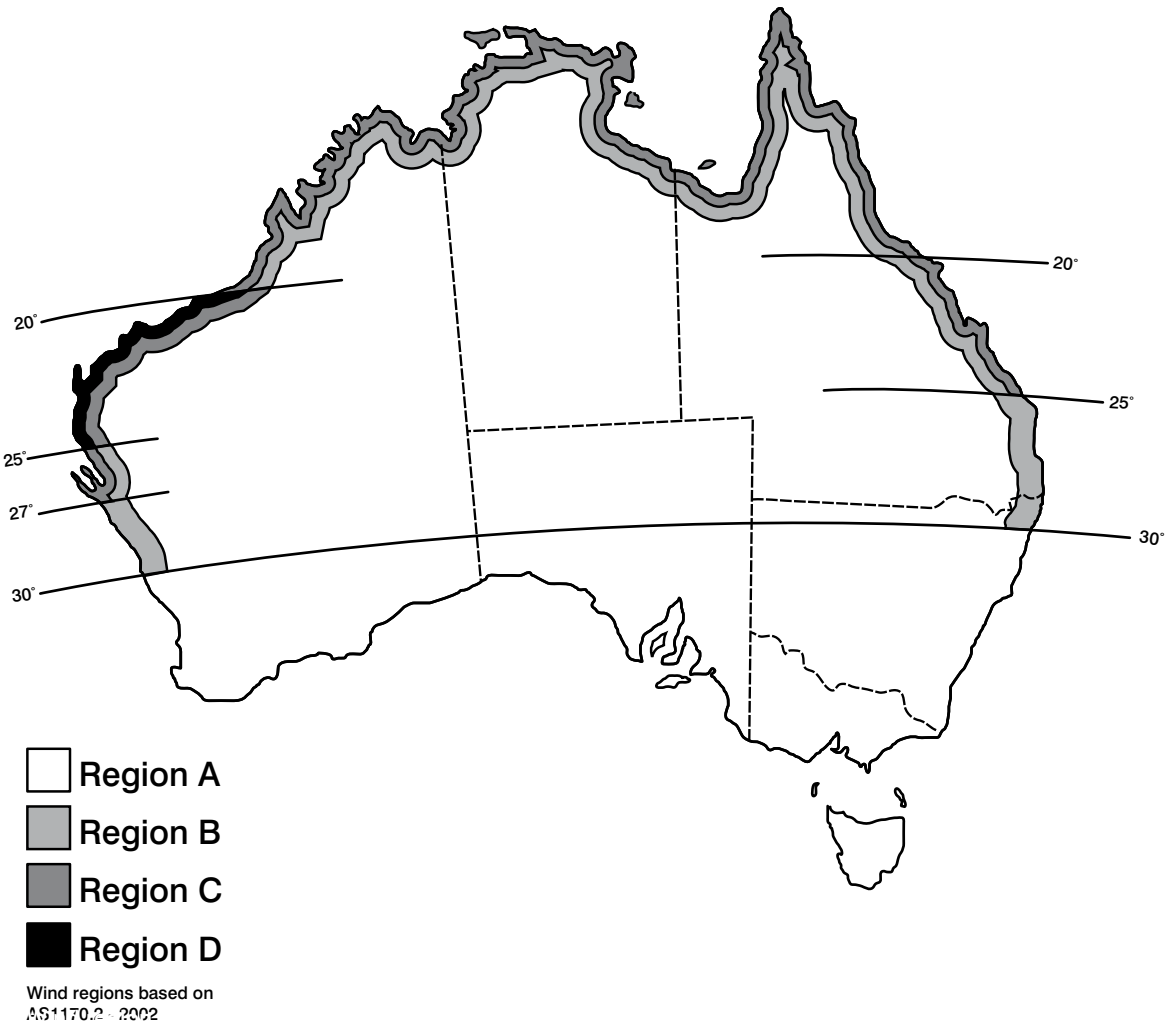
6061 aluminium is largely maintenance free. Only in highly polluted or marine conditions is rinsing with clean water required, during scheduled panel cleaning.

Warranty Conditions

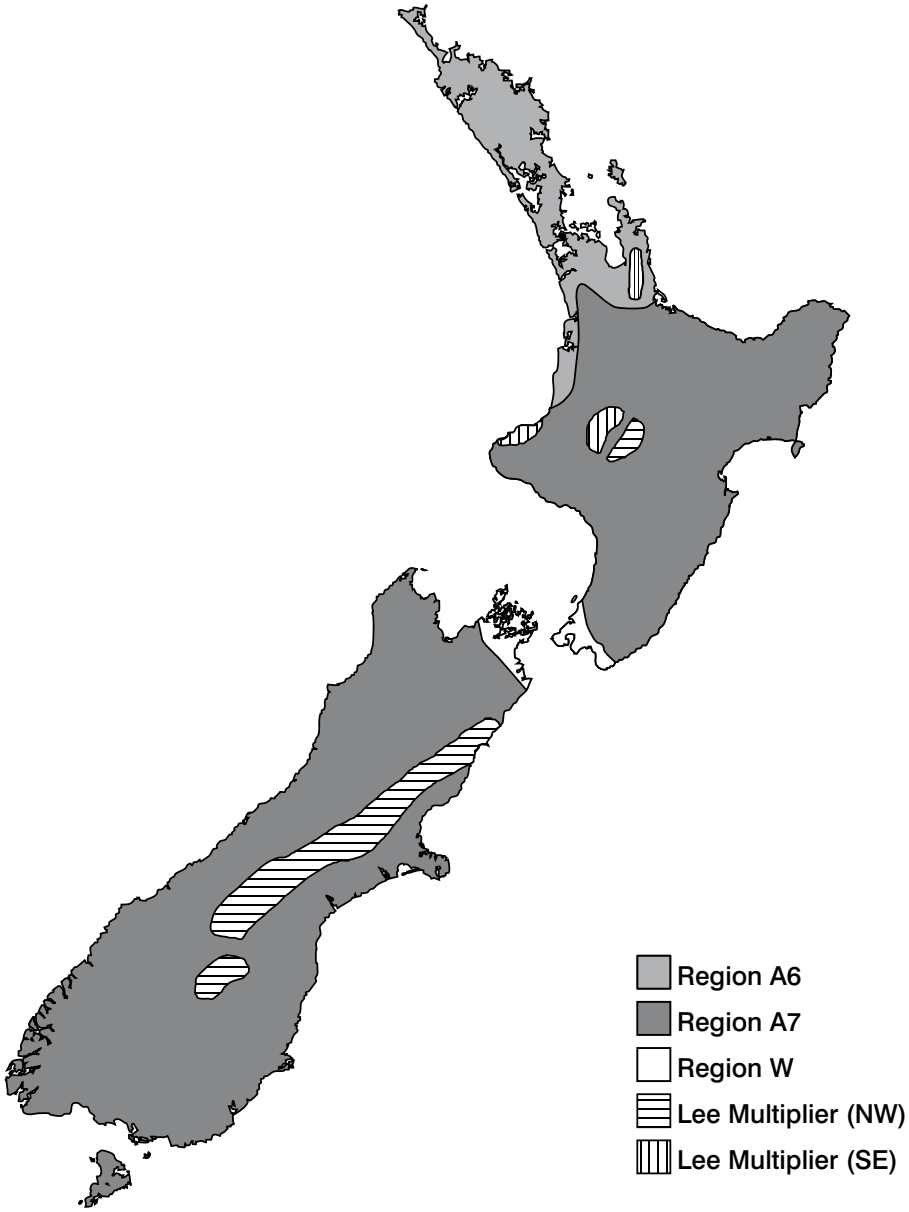
- Warranty period is 10 years.
- Deformation due to structural movement beneath and unrelated to the installation of Blue Sun Group is not covered by the warranty.
- Warranty does not cover failure or loss of solar panels not installed in accordance with the guidelines in this manual (or subsequent revisions) or with the appropriate Australian Standards.
- Warranty does not cover the exchange of bolts, drilling of holes, bending and any other physical changes not intended in standard installation procedure.

Appendices

Appendix A: Wind Region Map Australia (in accordance with AS/NZS 1170.2)



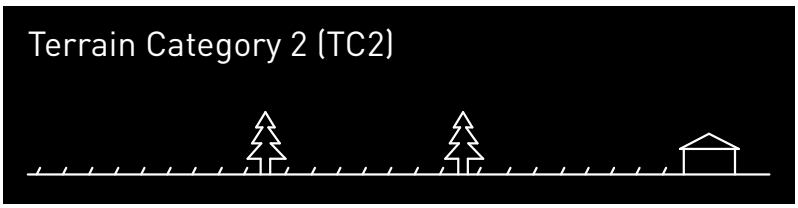
Appendix A: Wind Region Map New Zealand (in accordance with AS/NZS 1170.2)



Wind Speed for Ultimate Strength in Different Regions

Region	Wind Speed - m/sec
A	50
B	60
C	70
D	85

Appendix B: Terrain Category Definitions (in accordance with AS/NZS 1170.2)



Terrain Category 2 (TC2)

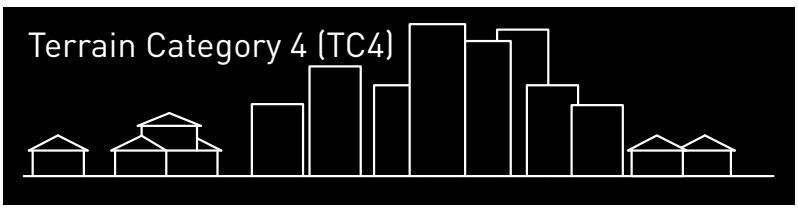
Site near water or cleared rural land with few obstructions to wind.

Terrain Category 2.5 (TC2.5)

Site near scattered trees or buildings and near low obstructions such as crops, fields, etc.

Terrain Category 3 (TC3)

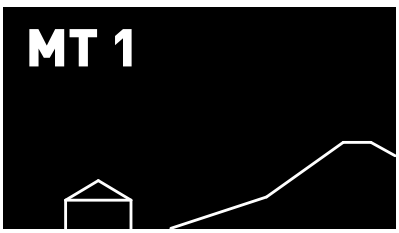
Site surrounded by trees or buildings 3m to 5m high (typical suburban site).



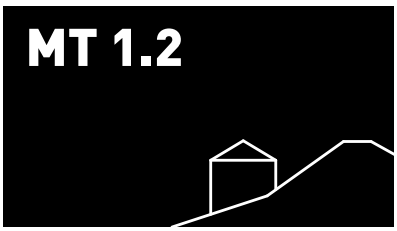
Terrain Category 4 (TC4)

Site located in highly built up industrial or inner city areas (10m to 30m obstructions).

Appendix C: Topographic Factor Definition (in accordance with AS/NZS 1170.2)

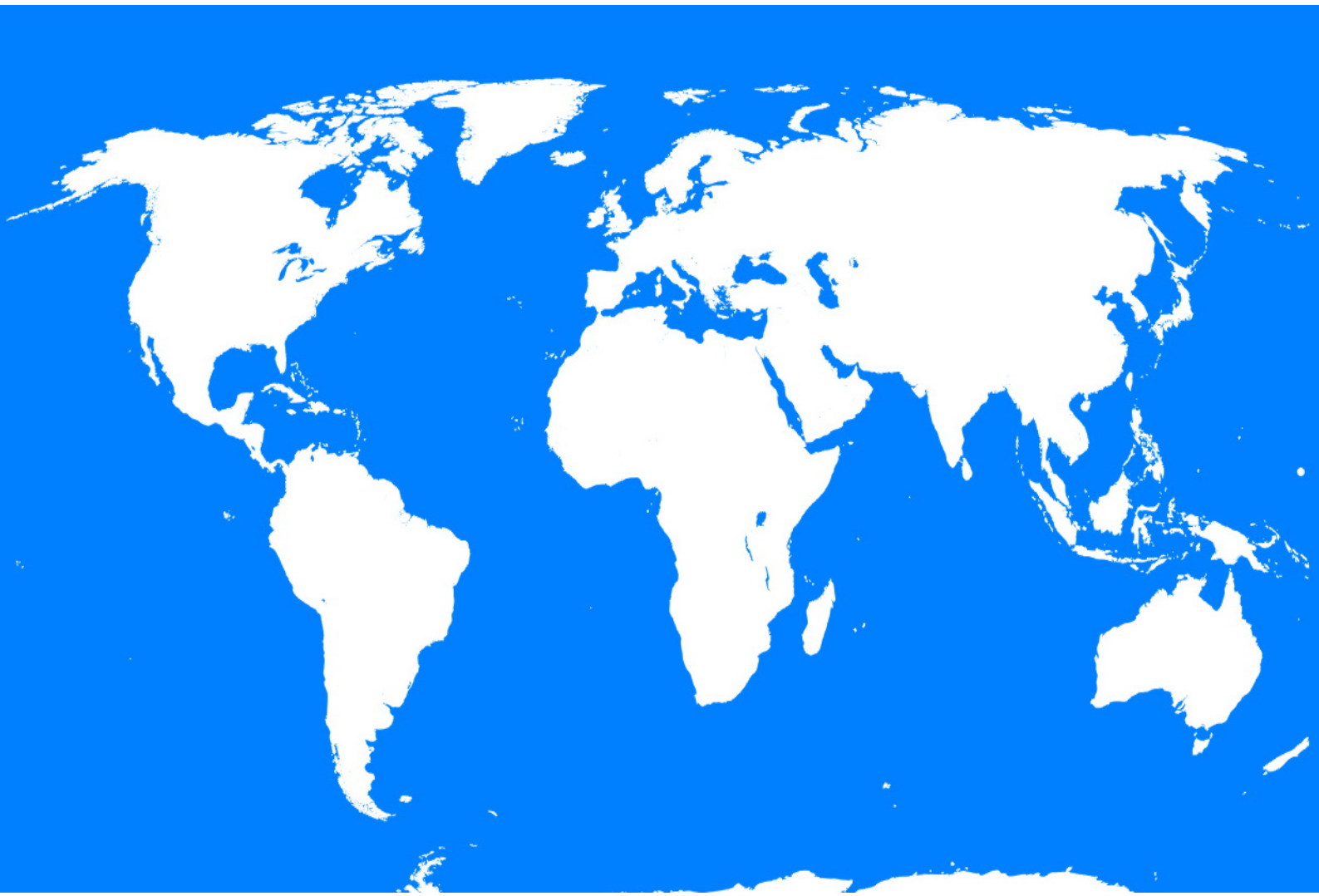


A **topographic factor MT = 1.0** for buildings on level (or near level) ground.



A **topographic factor MT = 1.2** for buildings located on a hill with an upwind slope of 15 – 30 degrees.

A **topographic factor MT = 1.48** for buildings located on a hill with an upwind slope of 30 degrees or more (Note: slopes above 30 degrees to be referred to a SunLock engineer).



Contact Details

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